What is claimed:

1. A method for detecting binding of a target molecule to a Lantibody Display Peptide comprising a chimeric polypeptide comprising a lantibiotic peptide, an amino acid spacer attached to the C-terminus of the lantibiotic peptide, and a subtilin leader segment attached to the spacer, the method comprising reacting a host cell expressing the Lantibody Display Peptide on its surface with the target molecule and measuring a change in a biological activity of the target molecule.

2. The method of claim 1, wherein the target molecule comprises a nucleophilic group.

3. The method of claim 1, wherein the nucleophilic group is located within an antigen, an antibody, a virus particle, a bacterial cell, a bacterial spore, a vegetative bacterial cell, or a protein or peptide on any of the aforementioned molecules.

4. The method of claim 1, wherein the change in the biological activity comprises inhibiting growth of an infectious particle, inhibiting proliferation of an infectious particle, inhibiting growth of a cancerous cell, inhibiting proliferation of a cancerous cell, inhibiting enzymatic activity of an enzyme and modifying enzymatic activity of an enzyme.

5. The method of claim 1, wherein the Lantibody Display Peptide comprises sublancin 168.

6. The method of claim 1, wherein the host cell is Bacillus subtilis strain 168.

7. A method of screening a Lantibody Display Library for binding to one or more target molecules comprising

a) a plurality of bacterial cells expressing different lantibody display peptides on their

surfaces, each lantibody display peptide comprising a chimeric polypeptide comprising a lantibiotic peptide, an amino acid spacer attached to the C-terminus of the lantibiotic peptide, and a subtilin leader segment attached to the spacer;

b) exposing the plurality of bacterial cells to one or more target molecules to bind any target molecule to a lantibody display peptide having affinity therefore;

c) binding any of the plurality of bacterial cells of step b) having a target molecule bound thereto to a binding agent having affinity for a lantibody display peptide complex; and

d) isolating the bacterial cells of step c) using means for recognizing the binding agent.

8. The method of screening of claim 7, wherein the bacterial cell is Bacillus subtilis.

9. The method of screening of claim 7, wherein the lantibody is sublancin.

10. A method of producing a Lantibody Display Library comprising

a) providing a gene encoding a Lantibody Display Peptide comprising a chimeric polypeptide comprising a lantibiotic peptide, an amino acid spacer attached to the C-terminus of the lantibiotic peptide, and a subtilin leader segment attached to the spacer;

b) mutagenizing the gene wherein the gene contains a polymorphism;

c) transfecting a host cell with the mutant gene and expressing the lantibody display peptide on the surface of the host cell;

d) repeating steps a) through c) at least once.